

REMARKS

Claims 1-4, 6-12, and 14-18 are currently pending in the application. Claims 5 and 13 have been canceled. Claims 1, 3, 6, and 10 have been amended. Applicant respectfully submits that no new matter has been added. Applicant respectfully requests reconsideration of the application in view of the foregoing amendments and the following remarks.

Claims 1, 3-6, 10, and 16-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,026,890 to Akachi ("Akachi") in view of U.S. Patent No. 4,830,100 to Kato et al. ("Kato").

Independent claim 1 relates to a cooling system for removal of heat from at least one heat generating component. Applicant respectfully submits that the cited combination of Akachi and Kato fails to teach or suggest at least one of the distinguishing features of independent claim 1, namely, a generally planar portion for positioning substantially near at least one heat generating component, wherein a first sealed end and a second sealed end are oriented opposite from the generally planar portion. In addition, Applicant respectfully submits that the cited combination of Akachi and Kato fails to disclose a low-profile extrusion being curved upon itself into a generally toroidal shape.

Akachi discloses a heat exchanger utilizing a multi-hole flexible band of light metal formed, by extrusion, with a plurality of longitudinal small holes extending in parallel to one another from one band end to another end. The longitudinal holes are connected to each of the end portions of the band. Both ends of the bands are closed by welding to form a sealed cavity partly filled with a working fluid in partial vacuum. The sealed cavity may be in the form of a single long continuous passage, or in the form of parallel passages connected together at both ends.

Kato discloses a heat-pipe device for transferring heat generated by a heat-generating element, having at least one heat-pipe body which is an extrudate of plate-like configuration made of aluminum or its alloy. The heat-pipe body includes a planer-structure portion which has on one side thereof a flat face to which the heat-generating element is directly fixed. Also disclosed is a heat-sink device for cooling a heat-generating element having at least one heat-pipe body including a planer-structure portion and a plurality of passage-defining portions.

In contrast to claim 1, there is no teaching or suggestion by the combination of Akachi and Kato of a generally planar portion for positioning substantially near at least one heat generating component, wherein a first sealed end and a second sealed end are oriented opposite

from the generally planar portion. Akachi describes that a multi-hole band is bent in such a shape that the band meanders between a high temperature region and a low temperature region. Akachi describes in a further embodiment that the multi-hole band may be bent in a serpentine form. Akachi describes in yet a further embodiment that the multi-hole band may be wound in a vortical manner so as to describe a spiral in a plane (Akachi, Col. 7, lines 45-49). In the various configurations disclosed in Akachi, it appears that the first sealed end and the second sealed end are not disposed generally opposite to one another as claimed. In addition, Akachi fails to disclose a generally planar portion wherein the first sealed end and the second sealed end are oriented opposite from the generally planar portion. Kato discloses a heat-sink device comprising three heat pipe bodies. The three heat pipe bodies are joined to each other and bent to form a substantially box like configuration with rounded corners. Longitudinal ends of the heat-pipe bodies are connected to each other by a header pipe located at a middle portion of a bottom wall of the heat-sink device. A first sealing cap and a second sealing cap are fixed by brazing to opposite ends of the header pipe. According to Kato, the first and second sealed ends are oriented on the planar portion and are not oriented opposite from the planar portion as claimed (Kato, Col. 11, lines 48-58; Fig. 15 and 17). Applicant respectfully submits that independent claim 1 distinguishes over the cited combination of Akachi and Kato and respectfully requests that the rejection thereof be withdrawn.

In addition, Applicant further points out that the cited combination of Akachi and Kato fails to disclose a low-profile extrusion being curved upon itself into a generally toroidal shape. In contrast to claim 1, Akachi describes that a multi-hole band is bent in such a shape that the band meanders between a high temperature region and a low temperature region. Akachi describes in a further embodiment that the multi-hole band may be wound in a vortical manner (Akachi, Col. 7, lines 45-49). Akachi describes in yet a further embodiment that the multi-hole band may be bent in a serpentine form. However, Akachi fails to disclose a toroidal shape as claimed. Kato discloses three heat pipe bodies that are joined to each other and bent to form a substantially box like configuration but fails to teach a toroidal shape as claimed. For this additional reason, Applicant respectfully submits that independent claim 1 distinguishes over the cited combination of Akachi and Kato and respectfully requests that the rejection thereof be withdrawn.

Dependent claim 5 has been canceled rendering the rejection thereof moot. Dependent claims 6 and 16 depend from and further restrict independent claim 1 in a patentable sense.

Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claim 1, dependent claims 6 and 16 distinguish over the cited combination of Akachi and Kato and are in condition for allowance. Withdrawal of the rejection of dependent claims 6 and 16 is respectfully requested.

Independent claim 3 relates to a generally toroidally-shaped heat pipe cooling system. Applicant respectfully submits that the cited combination of Akachi and Kato fails to teach or suggest at least one of the distinguishing features of independent claim 3, namely, a generally planar portion for positioning substantially near at least one heat generating component and wherein a first sealed end and a second sealed end are oriented opposite from the generally planar portion. In addition, Applicant respectfully submits that the cited combination of Akachi and Kato fails to disclose a low-profile extrusion being curved upon itself into a generally toroidal shape.

Akachi describes that a multi-hole band is bent in such a shape that the band meanders between a high temperature region and a low temperature region. Akachi describes in a further embodiment that the multi-hole band may be bent in a serpentine form. Akachi describes in yet a further embodiment that the multi-hole band may be wound in a vortical manner so as to describe a spiral in a plane (Akachi, Col. 7, lines 45-49). In the various configurations disclosed in Akachi, it appears that the first sealed end and the second sealed end are not disposed generally opposite to one another as claimed. In addition, Akachi fails to disclose a generally planar portion wherein a first sealed end and a second sealed end are oriented opposite from a generally planar portion. Kato discloses a heat-sink device comprising three heat pipe bodies. The three heat pipe bodies are joined to each other and bent to form a substantially box like configuration with rounded corners. Longitudinal ends of the heat-pipe bodies are connected to each other by a header pipe located at a middle portion of a bottom wall of the heat-sink device. A first sealing cap and a second sealing cap are fixed by brazing to opposite ends of the header pipe. According to Kato, the first and second sealed ends are oriented on the planar portion and are not oriented opposite from the planar portion as claimed (Kato, Col. 11, lines 48-58; Fig. 15 and 17). Applicant respectfully submits that independent claim 3 distinguishes over the cited combination of Akachi and Kato and respectfully requests that the rejection thereof be withdrawn.

In addition, Applicant further points out that the cited combination of Akachi and Kato fails to disclose a low-profile extrusion being curved upon itself into a generally toroidal shape.

In contrast to claim 3, Akachi describes that a multi-hole band is bent in such a shape that the band meanders between a high temperature region and a low temperature region. Akachi describes in a further embodiment that the multi-hole band may be wound in a vortical manner (Akachi, Col. 7, lines 45-49). Akachi describes in yet a further embodiment that the multi-hole band may be bent in a serpentine form. However, Akachi fails to disclose a toroidal shape as claimed. Kato discloses three heat pipe bodies that are joined to each other and bent to form a substantially box like configuration but fails to teach a toroidal shape as claimed. For this additional reason, Applicant respectfully submits that independent claim 3 distinguishes over the cited combination of Akachi and Kato and respectfully requests that the rejection thereof be withdrawn.

Dependent claims 4 and 17 depend from and further restrict independent claim 3 in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claim 3, dependent claims 4 and 17 distinguish over the cited combination of Akachi and Kato and are in condition for allowance. Withdrawal of the rejection of dependent claims 4 and 17 is respectfully requested.

In addition, Applicant respectfully submits that the cited combination of Akachi and Kato fails to teach or suggest at least one of the distinguishing features of dependent claim 4, namely, a fin structure extending along at least a portion of an exterior surface of a low-profile extrusion. The Office Action concedes that Akachi does not disclose a fin structure extending along at least a portion of an exterior surface of a low-profile extrusion. The Office Action has cited Kato as teaching this feature. Applicant respectfully disagrees. In contrast to dependent claim 4, Kato teaches fin members 229 on an interior surface of a heat-pipe body and not on an exterior surface as claimed. For this additional reason, Applicant respectfully submits that dependent claim 4 distinguishes over the cited combination of Akachi and Kato and respectfully requests that the rejection thereof be withdrawn.

Independent claim 10 relates to a method for cooling heat generating elements. Applicant respectfully submits that the cited combination of Akachi and Kato fails to teach or suggest at least one of the distinguishing features of independent claim 10, namely, placing a generally planar portion of a generally toroidally-shaped heat pipe substantially near at least one heat generating element and wherein a first sealed end and a second sealed end are oriented opposite from the generally planar portion.

Akachi describes that a multi-hole band is bent in such a shape that the band meanders between a high temperature region and a low temperature region. Akachi describes in a further embodiment that the multi-hole band may be bent in a serpentine form. Akachi describes in yet a further embodiment that the multi-hole band may be wound in a vortical manner so as to describe a spiral in a plane (Akachi, Col. 7, lines 45-49). In the various configurations disclosed in Akachi, it appears that the first sealed end and the second sealed end are not disposed generally opposite to one another as claimed. In addition, Akachi fails to disclose a generally planar portion wherein a first sealed end and a second sealed end are oriented opposite from a generally planar portion. Kato discloses a heat-sink device comprising three heat pipe bodies. The three heat pipe bodies are joined to each other and bent to form a substantially box like configuration with rounded corners. Longitudinal ends of the heat-pipe bodies are connected to each other by a header pipe located at a middle portion of a bottom wall of the heat-sink device. A first sealing cap and a second sealing cap are fixed by brazing to opposite ends of the header pipe. According to Kato, the first and second sealed ends are oriented on the planar portion and are not oriented opposite from the planar portion as claimed (Kato, Col. 11, lines 48-58; Fig. 15 and 17). Applicant respectfully submits that independent claim 10 distinguishes over the cited combination of Akachi and Kato and respectfully requests that the rejection thereof be withdrawn.

In addition, Applicant further points out that the cited combination of Akachi and Kato fails to disclose a low-profile extrusion being curved upon itself into a generally toroidal shape. In contrast to claim 10, Akachi describes that a multi-hole band is bent in such a shape that the band meanders between a high temperature region and a low temperature region. Akachi describes in a further embodiment that the multi-hole band may be wound in a vortical manner (Akachi, Col. 7, lines 45-49). Akachi describes in yet a further embodiment that the multi-hole band may be bent in a serpentine form. However, Akachi fails to disclose a toroidal shape as claimed. Kato discloses three heat pipe bodies that are joined to each other and bent to form a substantially box like configuration but fails to teach a toroidally-shaped heat pipe as claimed. For this additional reason, Applicant respectfully submits that independent claim 10 distinguishes over the cited combination of Akachi and Kato and respectfully requests that the rejection thereof be withdrawn.

Dependent claim 18 depends from and further restricts independent claim 10 in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above

with respect to the rejection of independent claim 10, dependent claim 18 distinguishes over the cited combination of Akachi and Kato and is in condition for allowance. Withdrawal of the rejection of dependent claim 18 is respectfully requested.

Claims 2, 7-9, and 11-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Akachi in view of Kato and further in view of U.S. Patent No. 6,315,033 to Li ("Li").

Dependent claim 13 has been canceled rendering the rejection thereof moot. Dependent claim 2 depends from and further restricts independent claim 1 in a patentable sense. Dependent claims 7-9 depend from and further restrict independent claim 3 in a patentable sense. Dependent claims 11-12 and 14-15 depend from and further restrict independent claim 10 in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claims 1, 3, and 10, respectively, dependent claims 2, 7-9, 11-12, and 14-15 distinguish over the cited combination of Akachi and Kato and are in condition for allowance. Withdrawal of the rejection of dependent claim 2, 7-9, 11-12, and 14-15 is respectfully requested.

In view of the above amendment, Applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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